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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/706,927

11/14/2003

Yuka Yamada

YAMADA =45A

7435

1444

7590

11/30/2004

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EXAMINER

HODGES, MATTHEW P

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,927

Applicant(s)

YAMADA ET AL.

Examiner

Matt P Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-6, 13, 14 and 17-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-6, 13, 14 and 17-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

The Amendment, filed on 9/14/2004, has been entered and acknowledged by the Examiner.

Cancellation of claims 1, 2, 7-12, 15, and 16 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3-6, 17-21, and 24-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamoto et al. (US 6,417,606)

Regarding claim 17, Nakamoto discloses (see figure 3D) an electron emissive element including a cold cathode having a substrate (101), an insulating layer (203) formed on the substrate and including a hole at the center of the substrate, a gate electrode (301) formed on the insulating layer and protruding into the hole, an interference layer (104) and an crystalline thin film (105) formed on the interference layer at each of the holes formed on the substrate and

including fine projections that point towards an anode. The crystalline thin film emits electrons when a voltage is run between the cold cathode including the film and the gate electrode.

Regarding claim 18, Nakamoto discloses the use of a conductive material for the interference layer. (Column 5 lines 63-67).

Regarding claims 3-6, Nakamoto further discloses the use of either TiC or TiN in the crystalline fine particle film. (Column 6 lines 37-51).

Regarding claim 19, Nakamoto discloses the use of an emitter formed of the crystalline thin film being disposed on the same plane position of the gate. (See figure 3D).

Regarding claim 20, Nakamoto alternatively discloses (see figure 11) the electron emission element described above except for the use of a resistive interference layer (1101) in the place of the conductive interference layer.

Regarding claim 21, Nakamoto discloses (see figure 3D) the use of a conductive film (104) as the interference layer. The conductive film is formed under the crystalline thin film and has the same orientation. (See figure 3D).

Regarding claims 24 and 25, Nakamoto discloses the use of the emitter elements in a flat-type display device.

Regarding claims 26-29, Nakamoto further discloses the use of a glass substrate. (Column 6 lines 16-20).

Claims 13, 14, 17, 18, 26, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Chalamala et al. (US 6,091,190)

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Regarding claims 17 and 18, Chalamala discloses (see figure 1) an electron emissive element including a cold cathode having a substrate (110), an insulating layer (114) formed on the substrate and including a hole at the center of the substrate, a gate electrode (116) formed on the insulating layer and protruding into the hole, an interference layer (118) and an crystalline thin film (120) formed on the interference layer at each of the holes formed on the substrate and including fine projections that point towards an anode. The cold cathode emits electrons when a voltage is run between the cold cathode including the film and the gate electrode.

Regarding claims 26 and 27, Chalamala further discloses the use of a glass substrate. (Column 2 lines 60-62).

Regarding claims 13 and 14, Chalamala further discloses the use of In_2O_3 in the crystalline thin film. (Column 2 lines 40-45).

Claims 22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al. (US 5,391,956)

Regarding claims 22 and 23, Watanabe discloses (see figure 3) an electron emissive element including a substrate (301), an insulating layer (302) formed on the substrate and including a hole at the center of the substrate, a gate electrode (303) formed on the insulating layer and protruding into the hole, and a cold cathode having a crystalline thin film (304) consisting of an electron emissive material. The crystalline thin film is formed over a conductive layer (310) which is formed over the substrate including in the holes formed in the insulating layer. (See figure 6). (Column 10 lines 27-42). Further the electron emissive element is used as the source in a CRT device. (Column 10 lines 52-57).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Joseph Williams
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